What is claimed is:

1. A laser oscillator device comprising an excitation beam source for generating an excitation beam; a lasing medium receiving said excitation beam for amplifying light; a laser oscillator for inducing resonance of light emitted from said lasing medium to perform laser oscillation; and a cooling system for cooling said lasing medium;

said cooling system using a gas as a heat-carrying medium.

2. A laser oscillator device in accordance with claim 1, wherein said cooling system cools the lasing medium to a temperature lower than the evaporation temperature of liquid nitrogen.

3. A laser oscillator device in accordance with claim 1, wherein said cooling system uses a GM-type refrigerator.

4. A laser oscillator device in accordance with claim 1, wherein said heat-carrying medium is helium gas.

5. A laser oscillator device in accordance with claim 1, wherein said cooling system comprises a cooling holder for holding and cooling said lasing medium; and said cooling holder and lasing medium contact each other at only a single surface.

6. A laser oscillator device in accordance with claim 5, wherein said cooling holder is planar, and supports said lasing medium on a top surface.

7. A laser oscillator device in accordance with claim 5, wherein said cooling holder is in the shape of a tube having openings on both ends and housing a lasing medium.

8. A laser oscillator device in accordance with claim 5, wherein said cooling holder is composed mainly of copper.

9. A laser oscillator device in accordance with claim 1, wherein said lasing medium is a titanium sapphire crystal.

10. A laser oscillator device in accordance with claim 5, wherein said lasing medium and said cooling holder are attached by means of a material selected from among indium, silver paste, epoxy and varnish.